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DATE : February 21, 1980

TO : Bob Youngs

FROM : Pete Manault

SUBJECT : PCB Substitute Fluids

After yesterday's meeting with the folks from General Electric, it seems that a restatement of OEA's position regarding Dielectrol II is appropriate. Our reservations about this fluid involve the following points:

- o The material is 30% trichlorobenzene (TCB), a suspected hazardous material about which little is known. Its wide use and close chemical similarity to known toxic pollutants in the chlorinated benzene family, such as monochlorobenzene and hexachlorobenzene (Lindane), caused the TSCA Interagency Test Committee to recommend it for extensive testing. The results of these tests, as indicated by G.E., should have been available in September 1979. Until we see the results of these tests, especially mutagenic, teratogenic (birth defects) and chronic toxicity tests, we will be reluctant to approve Dielectrol II, regardless of how many other utilities use it. Even Sangamo, who uses TCB in its fluid, states that TCB may have chronic toxicity problems like so many other halogenated hydrocarbons.
- o While isopropyl biphenyl and Dielectrol II both have low acute toxicity (as does PCB), isopropyl biphenyl, from what we know of it:
  - (1) has lower acute toxicity;
  - (2) lower chronic toxicity (1000 ppm "no effect" level vs. 250 ppm for G.E.'s fluid in 28-day feeding studies); and
  - (3) biodegrades faster (more than 70% biodegraded after 25 days vs. 58% for Dielectrol II and 1% for TCB).
- o One study on the effects of large doses of DEHP on mammalian reproduction showed dramatic mutations, decreased fetal weights, pronounced decrease in fertility, an increase in early fetal deaths and a reduced number of fetal implants.

- o Bioaccumulation does not appear to be a problem with isopropyl biphenyl or DEHP (the major component of Dielectrol II), although again isopropyl biphenyl looks better. Studies have been performed by G.E. on the bioaccumulation properties of TCB, but the results are noticeably absent in their sales material. Dr. Arisman said she would send us the results. Although G.E. seemed to dismiss any concerns about bioaccumulation since, as they claim, TCB evaporates rapidly from water, the danger of inhalation during spill cleanup could be an even bigger problem.
- o An independent literature search by Weyerhaeuser resulted in the same conclusion we reached. They rated isopropyl biphenyl as the most benign of five substitute fluids for capacitors (DEHP was rated fourth).

While we certainly don't claim to have all the answers on PCB substitutes, we recommend that future contract specifications include a requirement to supply the documentation listed below for our use in evaluating the fluids.

- o Results of all known tests on acute toxicity on mammals and fish (e.g., LD50 for 14-day old rats and for Bluegill).
- o Results of all known tests on subacute or chronic toxicity, based on prolonged feedings to mammals and fish.
- o Results of all tests for carcinogenicity, mutagenicity, teratogenicity, embryotoxicity and fetotoxicity, if available.
- o Results of all tests on biodegradability (e.g., the standard River Die Away test) and bioaccumulation after prolonged exposure.
- o Planned studies or studies in progress, either by the manufacturer, independent parties, or, as a result of the TSCA Testing Committee's recommendations by EPA.
- o Required disposal procedures and other recommended or required handling precautions.

While this list may seem to place an unreasonable burden on the manufacturer, the fact is that no one is more aware of the need to prove that their product is safe than the manufacturer. They have the information and can provide it much more easily than we can obtain it. But, we must be assured that they provide all of it to our specifications and not theirs. It is only natural for a company to put their best foot forward.

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In all fairness to Westinghouse, I think they should be given the same opportunity to sell their product as G.E. had. Could you please see about arranging a similar meeting with their sales representatives and environmental/safety personnel? I think we need to hear their side and perhaps Sangamo and McGraw-Edison could do the same.

WR:pk

cc: Mr. S. J. Zimmer, General Electric Co.  
P.O. Box 88850  
Seattle, WA 98188

cc Murray  
Miller  
Recchi  
Rockey  
Mithoug  
Harman  
H. Johnson  
Willing  
Riley  
OEA  
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